M/037/084

COTTER CORPORATION

PAPOOSE LIMESTONE MINE
San Juan County, Utah

Large Mine Application
May, 1995

COTTER CORPORATION
Western Slope Operations

DIAL 303-864-7347
P. O. BOX 700 — AIRPORT ROAD
NUCLA, COLORADO 81424

May 18, 1995

Anthony A. Gallegos
Reclamation Engineer
Utah Department of Natural Resources
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

RE: Notice of Intention to Commence Large Mining Operations on State Lease ML-45609, San Juan County, Utah

Dear Mr. Gallegos:

Enclosed is a completed form MR-LMO including a Mine Plan, Maps and associated soils and vegetation data. Hopefully, reference within the application to the Mine Plan and Exhibits will not be too confusing. The proposed project will allow Cotter Corporation to supply an increase in demand for our limestone produced under Small Mine Permit No. 5/037/084.

A copy of this application and Mine Plan has been sent to Mr. John Blake of the Utah School and Institutional Trust Land Administration.

Cotter Corporation has also submitted a new application to the Utah Department of Environmental Quality (Division of Air Quality) now under Intent to Approve Order No. DAQE-378-95 to cover the possible increase in production.

As we discussed in our last telephone conversation, Cotter will probably require a variance concerning topsoil replacement during reclamation. I look forward to your inspection visit as soon as possible to discuss the issue in detail.

Should you have any questions or comments in the interim, please contact Jon Showalter at Cotter's Nucla Office, P.O. Box 700, Nucla, Colorado 81424, or call 970-864-7347.

Sincerely,
COTTER CORPORATION

Jon Showalter
Project Geologist

JS/tlt
limeudnr.js

FORM MR-LMO

(Revised 1/92)

FOR DIVISION USE ONLY

File #: M / /

Date Approved: / /

DOGM Lead:

ALSO SEE FILE S/037/084

STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL, GAS AND MINING

355 West North Temple

3 Triad Center, Suite 350

Salt Lake City, Utah 84180-1203

Telephone: (801) 538-5340

RECEIVED

MAY 26 1995

DIV. OF OIL, GAS & MINING

NOTICE OF INTENTION TO COMMENCE LARGE MINING OPERATIONS

The informational requirements in this form are based on provisions of the Mined Land Reclamation Act, Title 40-8, Utah Code Annotated 1953, General Rules and Rules of Practice and Procedures.

This form applies only to mining operations which disturb or will disturb greater than five acres at any given time.

"MINING OPERATIONS" means those activities conducted on the surface of the land for the exploration for, development of, or extraction of a mineral deposit, including, but not limited to, surface mining and the surface effects of underground and in situ mining, on-site transportation, concentrating, milling, evaporation, and other primary processing.

"Mining operation" does not include: the extraction of sand, gravel, and rock aggregate; the extraction of oil and gas as defined in Chapter 6, Title 40; the extraction of geothermal steam; smelting or refining operations; off-site operations and transportation; or reconnaissance activities which will not cause significant surface resource disturbance or involve the use of mechanized earth-moving equipment such as bulldozers or backhoes.

PLEASE NOTE: If extra space is required to complete a section, please attach additional sheets and include cross-referenced page numbers as necessary. The operator may submit this information on an alternate form, however the same or similar format must be used.

I. GENERAL INFORMATION (Rule R647-4-104)

1. **Mine Name:** Papoose Mine

2. **Name of Applicant or Company:** Cotter Corporation

   Corporation (X) Partnership ( ) Individual ( )

3. **Permanent Address:** P.O. Box 700 28151 DD Road

   Nucla, Colo. 81424

   (970) 864-7347

4. **Company Representative** (or designated operator):

   Name: Glen Williams
   Title: Manager, Western Slope Operations
   Address: P.O. Box 700, Nucla, CO 81424
   Phone: (970) 864-7347 FAX (970) 864-7287

5. **Location of Operation:**

   County(ies) San Juan Lisbon Valley 7.5 minute quadrangle

   NE 1/4 of NW 1/4, Section: 36 Township: 29½S Range: 24E
   NW 1/4 of NW 1/4, Section: 36 Township: 29½S Range: 24E
   SE 1/4 of NW 1/4, Section: 36 Township: 29½S Range: 24E
   SW 1/4 of NW 1/4, Section: 36 Township: 29½S Range: 24E
   NE 1/4 of SW 1/4, Section: 36 Township: 29½S Range: 24E

6. **Ownership of the land surface** (circle which applies): Private (Fee), Public Domain (BLM), National Forest (USFS), (State of Utah) or other:

   Name: Dept. of Natural Address: 355 West North Temple
   ~~Name~~: Resources - Division ~~Address~~: 3 Triad Center, Suite 400
   ~~Name~~: of State Lands & ~~Address~~: Salt Lake City, Utah 84180-1204
   ~~Name~~: Forestry ~~Address~~:

7. **Owner(s) of record of the minerals to be mined:** ML 45609

   Name: State of Utah Address:
   Name: (as above) Address:
   Name: Address:
   Name: Address:

8. **Have the above owners been notified in writing?** Yes X No
   If no, why not?

9. **Does the operator have legal right to enter and conduct mining operations on the land covered by this notice?** Yes X No _____.

II. MAPS, DRAWINGS & PHOTOGRAPHS (Rule R647-4-105)

1. Base Map

A complete and correct topographic base map (or maps) with appropriate contour intervals must be submitted with this notice which show all of the items on the following checklist. The scale should be approximately 1 inch = 2,000 feet (preferably a USGS 7.5 minute series or equivalent topographic map where available) showing the location of lands to be affected in sufficient detail to permit calculation of proposed surface disturbance.

Exhibit A (acreage calculations should be made from Exhibit B, 1"=500' map)

Map Checklist

Please check off each section as it is drawn on the map(s). Does the map show:

(a) Property boundaries of surface ownership of all lands which are to be affected by the mining operations; Exhibit C

(b) Perennial streams, springs and other bodies of water, roads, buildings, landing strips, electrical transmission lines, water wells, oil and gas pipelines, existing wells or boreholes, or other existing surface or subsurface facilities within 500 feet of the proposed mining operations; Exhibit B

(c) Proposed route of access to the mining operations from nearest publicly maintained highway (Map scale appropriate to show access); Exhibit C

(d) Known areas which have been previously impacted by mining or exploration activities within the proposed land affected; Exhibit B

(e) Acreages proposed to be disturbed or reclaimed each year (or other suitable time period. Exhibit F

2. Surface Facilities Map

A surface facilities map shall be provided at a scale of not less than 1" = 500'. Exhibit B

Map Checklist

Please check off each section as it is drawn on the map. Does the map show:

(a) Proposed surface facilities, including but not limited to buildings, stationary mining/processing equipment, roads, utilities, power lines, proposed drainage control structures, and the location of topsoil storage areas, overburden/waste dumps, tailings or processed waste facilities, disposal areas for overburden, solid and liquid wastes, and wastewater discharge, treatment and containment facilities; Exhibit B

(b) A border clearly outlining the extent of the surface disturbed area proposed to be affected by mining, and the number of acres proposed to be affected; Exhibit B

(c) The location of known test borings, pits, or core holes. Exhibit B

3. **Additional Maps**

Additional maps and drawings may be required as applicable in accordance with Rule R647-4-105.3.

III. OPERATION PLAN (Rule R647-4-106)

1. **Mineral(s) to be mined:** Limestone

2. **Acreage to be disturbed:** Includes existing mine disturbance

Minesite (operating, storage, disposal areas, etc.):	19.84
Access/haul roads/conveyors:	0.16
Associated on-site processing facilities:	0.00
Total:	20.00

3. **Describe methods and procedures to be employed for mining, on-site processing and concurrent reclamation.**

See part II Mine Plan under A. Operation
and part VII Reclamation Plan under A. During Operation

4. **Elevation of groundwater** (if known): * ft.
   * See Part V, Mine Plan (Water use, etc.)
5. **Thickness of soil material to be stockpiled:** 0-12 inches
   Area from which soil material can be salvaged: 20 acres
   Volume of soil to be stockpiled: < 17,000 cu. yds.
   (cross reference with item IV-17)
6. **Thickness of overburden:** none ft.
7. **Thickness of mineral deposit:** < 20 ft.
8. **Volume of refuse, tailings, and processing waste stockpiles:** 0 cu. yds.
9. **Acreage and capacity of tailings ponds and water storage ponds to be constructed:** 0 acres

   0 Acre-Feet
10. **Describe how topsoil or subsoil material will be removed, stockpiled and protected:** See Part II, Mine Plan under A. Operation and E. Storm water control.
11. **Describe how overburden material will be removed and stockpiled:**
    No overburden.
12. **Describe how tailings, waste rock, rejected materials, etc. will be disposed of:**
    If rejected materials exist, they will be used to contour pit walls to a 45° configuration before application of topsoil.
13. **Potentially deleterious materials must be analyzed for toxicity. Describe the nature of any deleterious materials which will be used, encountered, or generated onsite** (See Rule R647-1-004):
    Only used lubricants are expected to be generated on site and will be disposed of off-site at a proper facility, or will be recycled.
    Specify analyses to be conducted on these materials. N/A

    NOTE: The Division may stipulate additional analyses.
14. **For each tailings pond, sediment pond, or other major drainage control structures, attach design drawings and typical cross-sections.**

15. **Describe any proposed effluent discharge points (UPDES) and show their location on the map provided under Rule R647-4-105.2. Give the proposed discharge rate and expected water quality. Attach chemical analyses of such discharge if available.** None

16. **Vegetation** - The operator is required to return the land to a useful condition and reestablish at least 70 percent of the premining vegetation ground cover.

The ground cover percentage figure is determined by sampling and averaging the vegetation type(s) on the areas to be mined (see Attachment I for suggested sampling methods).

(a) Vegetation Survey - The following information needs to be completed based upon the vegetation survey:

Sampling method used Line intercept
Number of plots or transects 2

Ground Cover	Percent
Vegetation (perennial grass, forb and shrub cover)	13.5
Litter	25.5
Rock/rock fragments	24
Bare ground	37
	100%
Revegetation Requirement - 70 percent of above vegetation figure)	9.5 %

List the four (4) predominant perennial species of vegetation growing on the area.

Piñon Pine — Datil Yucca

Utah Juniper — Torrey Mormon Tea

See Exhibits D & E

(b) Photographs - The operator may submit photographs (prints) of the site sufficient to show existing vegetation conditions. These photographs should show the general appearance and condition of the area to be affected and may be utilized for comparison upon reclamation of the site. Photographs should be clearly marked as to the location, orientation and the date that the pictures were taken.

17. **Soils** - The plan shall include an order 3 Soil Survey (or similar) and map. This information is needed to determine which soils are suitable for stockpiling for revegetation. This soil data may be available from the local Soil Conservation Service office, or if on public lands, from the land management agency. The map needs to be of such scale that soil types can be accurately determined on the ground (see Attachment I).

    (a) Each soil type to be disturbed needs to be field analyzed for the following:

Depth of soil material	0-12 inches
Volume (for stockpiling)	< 17,000 cu. yds.
Texture (field determination)	see exhibits D & E
pH (field determination) (cross reference with item IV - 5)	see exhibits D & E

    (b) Where there are problem soil areas (as determined from the field examination) laboratory analysis may be necessary. Soil samples to be sent to the laboratory for analysis need to be about one pint in size, properly labeled, and in plastic bags. Each of the soil horizons on some sites may need to be sampled.

18. **Provide a narrative description of the geology of the area and/or a geologic cross section:** See Part I, Overview of Mine Plan.

IV. IMPACT ASSESSMENT (Rule R647-4-109)

Please provide a general narrative description identifying potential surface and/or subsurface impacts. Where applicable, this description should include surface and groundwater systems, threatened or endangered species or their critical habitats, existing soil resources for reclamation, slope stability, erosion control, air quality, and public health and safety.

See Part II Mine Plan under E. Storm Water Control, Part V Water Use and Hydrologic Regime and Part VI Impact Assessment

V. RECLAMATION PLAN (Rule R647-4-110)

1. **List current land use(s) other than mining:** Cattle, deer and elk grazing.

2. **List future post-reclamation land-use(s) proposed:** Cattle, deer and elk grazing.

3. **Describe each phase of reclamation of the minesite in detail under the following categories:**

(a) Disposal of Trash

Describe how buildings, foundations, trash and other waste materials will be disposed of. Any buildings will either be demolished and buried in pit or hauled off-site. All trash will be disposed of on-site or hauled to a proper facility.

(b) Backfilling and Grading

Describe equipment and methods to be employed, amount of materials to be moved and final disposition of any stockpiled materials. Equipment used will be bulldozers and front-end loaders. Pit walls will be brought to 45 or less by backfilling of any rejected material which will require 7.4 cubic yards per linear foot of pit wall.

(c) Soil Material Replacement

In order to reestablish the required ground cover, one to two feet (depending on underlying material) of suitable soil material usually has to be redistributed on the areas to be reseeded. If the stockpiled soil isn't sufficient for this, soil borrow areas will need to be located.

How much soil material is planned to be put on the area to be reseeded?
See Part VII, Mine Plan under C. Variance 12 inches

Where will this material come from? Stockpiled topsoil.

How will it be transported and spread? Spread from stockpiled areas utilizing bulldozers and front-end loaders.

(d) Seed Bed Preparation

Describe how the seedbed will be prepared and equipment to be used. Following spreading of topsoil either a harrow or disk will be employed to loosen soil to a depth of 6".

(The Division recommends ripping or discing six inches deep)

(e) Seed Mixture - List the species to be seeded:

Species Name	Seeding Rate (lbs Pure Live Seed/Acre)
See Part VII Reclamation Plan under A. During Operation	

(The Division recommends seeding 20 lbs./acre of native and introduced adaptable species of grass, forb, and browse seed and will provide a specific species list if requested)

(f) Seeding Method

Describe method of planting the seed. Broadcast seeded and harrowed or raked into soil ¼" to ½".

(The Division recommends planting the seed with a rangeland or farm drill, or if broadcast seeded, harrow or rake the seed 1/4 to 1/2 inch into the soil. Fall is the preferred time to seed)

(g) Fertilization

Describe fertilization method and rate. Monticello office of the Natural Resources Conservation Service recommends that no fertilizers be applied due to low rainfall in the area.

(h) Other Revegetation Procedures

If other reclamation procedures, such as mulching, irrigation, etc., are planned, describe them. None planned.

VI. **VARIANCE** (Rule R647-4-112)

Any planned deviations from Rule R647-4-007 (Operating Practices), R647-4-108 (Hole

Plugging Requirements), or Rule R647-4-111 (Reclamation Practices) must be identified below.

Rule Number	Title/Category
R647-4-111	Reclamation Practices
	See Part VII Reclamation Plan
	under C. Variance

For each variance requested, attach a narrative statement describing and delineating the area proposed to be affected by the variance, justifying the need for the variance, and discussing alternate methods or measures to be utilized.

VII. SURETY (Rule R647-4-113)

A Reclamation surety must be provided to the Division prior to final approval of this application. In calculating this amount, the Division will consider the following major steps:

1) Clean-up and removal of structures.
2) Backfilling, grading and contouring.
3) Soil material redistribution and stabilization.
4) Revegetation (preparation, seeding, mulching)

To assist the Division in determining a reasonable surety amount, please attach a reclamation cost estimate which addresses each of the above steps.

VIII. SIGNATURE REQUIREMENT

I hereby certify that the foregoing is true and correct.

Signature of Operator/Applicant: Glen Williams

Name (typed or print): Glen Williams

Title/Position (if applicable): Manager, Western Slope Operations

Date: May 23, 1995

PLEASE NOTE:

Section 40-8-13(2) of the Mined Land Reclamation Act provides for maintenance of confidentiality concerning certain portions of this report. Please check to see that any information desired to be held confidential is so labeled and included on separate sheets or maps.

Only information relating to the location, size or nature of the deposit may be protected as confidential.

Confidential Information Enclosed: ( ) Yes (X) No

I Overview

Cotter Corporation proposes to conduct a large scale shallow open pit limestone mining operation. The proposed mine is simply upgrading our present small scale operation at the same site due to an increase in demand for the limestone product. The limestone deposit consists of the upper unit of the Pennsylvanian aged Hermosa Formation. The land to be affected is Utah State land which is controlled by a State Lease. Accordingly, the Division of State Lands and Forestry has been given a copy of this proposed mine plan. The proposed mine site lies at an elevation ranging from 6650 to 6740 feet sloping from 8-16% to the west toward an unnamed intermittent tributary of Big Indian Wash. The surface is 20-30% bare limestone and 70-80% is covered with a very thin layer (usually less than 6") of soil. The mine area is vegetated at a moderate density by mature piñon and juniper trees with very sparse small shrubs and grass understory.

Limestone is the only mineral product to be mined. Any of the sparse topsoil to be stripped will be stockpiled and used later for reclamation purposes. The only waste rock types that will be generated consist of the possible fine rejects containing material from the very thin interbedded friable quartz sandstone lenses generated by the crushing and screening operation (described later) and minor amounts of coarser material which are rejected due to quality (excessively weathered material, silica nodules, etc.) Much of the fine rejects will be used to surface the access road and storage area and potentially sold elsewhere for road base. A market for the coarse rejects, such as riprap use, will also be sought in order to minimize the amount of waste rock left at the mine site. Annual production is anticipated to be approximately 35,000 tons of limestone necessitating mining approximately 40,000 tons of rock per year.

II Mine Plan

A. Operation

The anticipated sequence for the mining operation will be as follows: Trees and brush will be stripped, windrowed or piled with a bulldozer. The thin, sporadic soil will be stripped and stockpiled. Blast holes will be drilled with an air track drill. The drill machine will be supplied with a vacuum dust collection system to prevent all but a very minute amount of dust to be produced. Explosives will be loaded and the holes shot approximately once per month. In accordance with MSHA regulations, any possible area of approach will be closed by barriers or fences and be guarded during blasting.

These fences and barriers will also hinder access to the highwall of the pit. It should be noted that the pit and highwalls are not expected to be more than 20 feet deep.

The broken rock will be mucked and trammed to the crusher by means of a rubber-tired loader. Rock will be crushed and screened to a product size of minus 10" to plus ½". This will require only a primary crushing operation employing a portable jaw crusher. Water spray devices will be used, as necessary, to minimize dust emissions during crushing. The particle size of the stockpiled material and any undersize reject pile should be large enough to preclude dust emissions due to wind. The undersize reject pile will be sprayed with water as necessary to control fugitive dust. Dust emissions will be regulated under Approval Order #DAQE-378-95 from the Utah Division of Air Quality.

The crushed product will be transported by conveyor or loader to the stockpile area. A berm has been constructed around this area as needed to prevent any mined material from washing down slope into the nearby drainage. The storage pad is of sufficient size (0.67 acre) to allow for truck turning and loading. The pit will then advance to the southeast. The crushing and stockpile areas will also move southeastward, within the pit boundary, periodically as needed.

B. Access

Access to the mine site is off San Juan county road #370 (Lisbon Valley Road) approximately 1.3 miles southeast of the intersection with San Juan county road #306 (Big Indian Valley Road.) Approximately 460 feet of new access road 20 feet wide has been constructed in accordance with the encroachment requirements of the San Juan county road department engineer. A culvert of appropriate size has been installed to cross the drainage on the south side of County road #370. Construction of the remaining 425 feet of access road to the stockpile and mine area (885 ft. total access road) consisted of upgrading an existing old seismic exploration road. A dust suppressant will be applied as necessary to minimize the suspension of dust. The entire length of access road is located on the Utah State leased land. As a security measure, a gate has been installed on the northwest end of the mine area in order to deter access to the mine site by unauthorized persons.

C. Acreage of Disturbance

The acreage disturbed by the existing operation is estimated to be:

A) Access road,
   1) new - 0.16 acre,
   2) upgrade of existing road - 0.20 acre, for a total of 0.36 acre,

B) Storage Pad - 0.67
C) Topsoil Stockpile - 0.83
D) Mine area and area cleared prior to mining - 3.1 acre.

Total number of acres presently disturbed	5 acre
Additional acres to be permitted	15 acre
Total number of acres to be permitted -	20 acre

D. Surface Facilities

At present, a small camper trailer is being utilized as a mine office and for storage of tools and a portable toilet. In the future, two small buildings may be either constructed on site or moved in. These will serve as storage for lubricants in one case and tools and other equipment in the other. A larger enclosed portable toilet may also be employed should on-site personnel requirements increase. A fueling station has been established within a bermed area to control spillage. (see attached surface facilities map)

E. Storm Water Control

During mining operations, the pit and crushing area will remain a sufficient distance east of the drainage to generally preclude the potential for sediment to enter surface waters of the state. Also, since the mining operation will be near the crest of the ridge, very little storm water runoff is anticipated to enter and subsequently exit the mine area. Additional berms and silt fence have been constructed below the crushing area to minimize sedimentation from this area leaving the site and reaching the nearby drainage. Any storm water is regulated under Storm Water Permit No. UTR000257, issued by the Utah Division of Water Quality.

All mine-related trash will be disposed of on-site or removed from the property by the completion of the operation. In addition, activities will be conducted so as not to present fire hazards. Portable toilet facilities will be provided during periods of operation.

III Exploration Drilling

Cotter Corporation is planning a small exploration drilling project of approximately 10 holes extending down the center of the proposed Large Mine area. This project has already received permit file number S/037/084 to be conducted during the 1995/1996 exploration season from the Utah Division of Oil, Gas and Mining.

IV Site Access Controls and Other Lessee Notifications

As previously mentioned, barriers, such as windrows of stripped trees, fences, gate and signs will be used to deter entry of the mining area by the public and livestock during mining and later reclamation as necessary. The other lease holders of this parcel of State Land have been notified of Cotter's intent and application for a Large Mining Permit. These other lessees (Paul D. Redd of Monticello, Utah - Grazing Permit, Union Oil of California in Houston, Texas - Oil, Gas and Hydrocarbons lease and Jerome B. Guinand of Sandy, Utah - Metalliferous Minerals Lease) will be allowed access to the mining area if needed. None of the fences will be constructed in such a manner as to deny livestock access to existing watering places. There will be no other disturbance to any of the other surface resources on this State lease outside the 20 acres covered by this permit application.

V Water Use & Hydrologic Regime

All water to be used in this operation is expected to be purchased from Redd Ranches in La Sal, Utah and hauled to the mine site. No ground water has been encountered in the mining operation. Since the mine site is near the crest of the ridge, there is insufficient recharge area to contribute ground water to the area, especially at the shallow pit depths of 20 feet or less. Furthermore, the limestone is impermeable, so recharge would only be through joints and fractures. The underlying sandstone is poorly cemented and very permeable, thereby allowing infiltration, so no seeps are anticipated even at the base of the limestone bed.

VI Impact Assessment

As previously stated, no adverse impacts are expected to surface or ground water regimes. Soil resources impacts will be addressed through a variance under "Reclamation Plan" (following) as are slope stability and erosion control. There have been no state or federal threatened and endangered species encountered and no potential impacts are expected.

VII Reclamation Plan

A. During Operation

Reclamation will be done concurrently with mining as much as possible once the pit is large enough. This is not expected to happen until the third year of operation. Before any portion of the pit is abandoned, the highwall will be cut or backfilled with course reject material to a slope of less than 45°. The available top soil will be spread and scarified, then seeded with the following seed mixture chosen from a list of species suggested by the U.S. Soil Conservation Service offices in Monticello, Utah and Norwood, Colorado.

Grasses:	**lbs/acre (drilled)**	**lbs/acre (broadcast)**
Crested Wheat Grass (Hycrest)	3	6
Russian Wild Rye (Bozoisky)	3	6
Pubescent Wheat Grass (Luna)	4.2	8.4
Total Grasses	10.2	20.4
Forbs:		
Alfalfa (Spreader 2)	0.8	1.6
Shrubs:		
4-Wing Salt Bush (Rincon)	0.5	1.0
Total	**11.5 lb/acre**	**23.0 lb/acre**

A few of the original trees will be scattered across any reclaimed areas.

During the third year of operations, reclamation should begin on previously mined areas. This will be conducted concurrently with pit advance so as not to exceed the permitted 20 acres before release of reclaimed acreage.

B. Final

Buildings will either be moved off the site, salvaged or demolished and covered over in the pit.

After mining operations cease and it is determined the access road and stockpile area are no longer needed (that is if the Utah Division of State Lands and Forestry does not want the road left in place) they will be reclaimed according to state reclamation standards.

Also, any remaining reject material resulting from sizing operations will be disposed of in the pit.

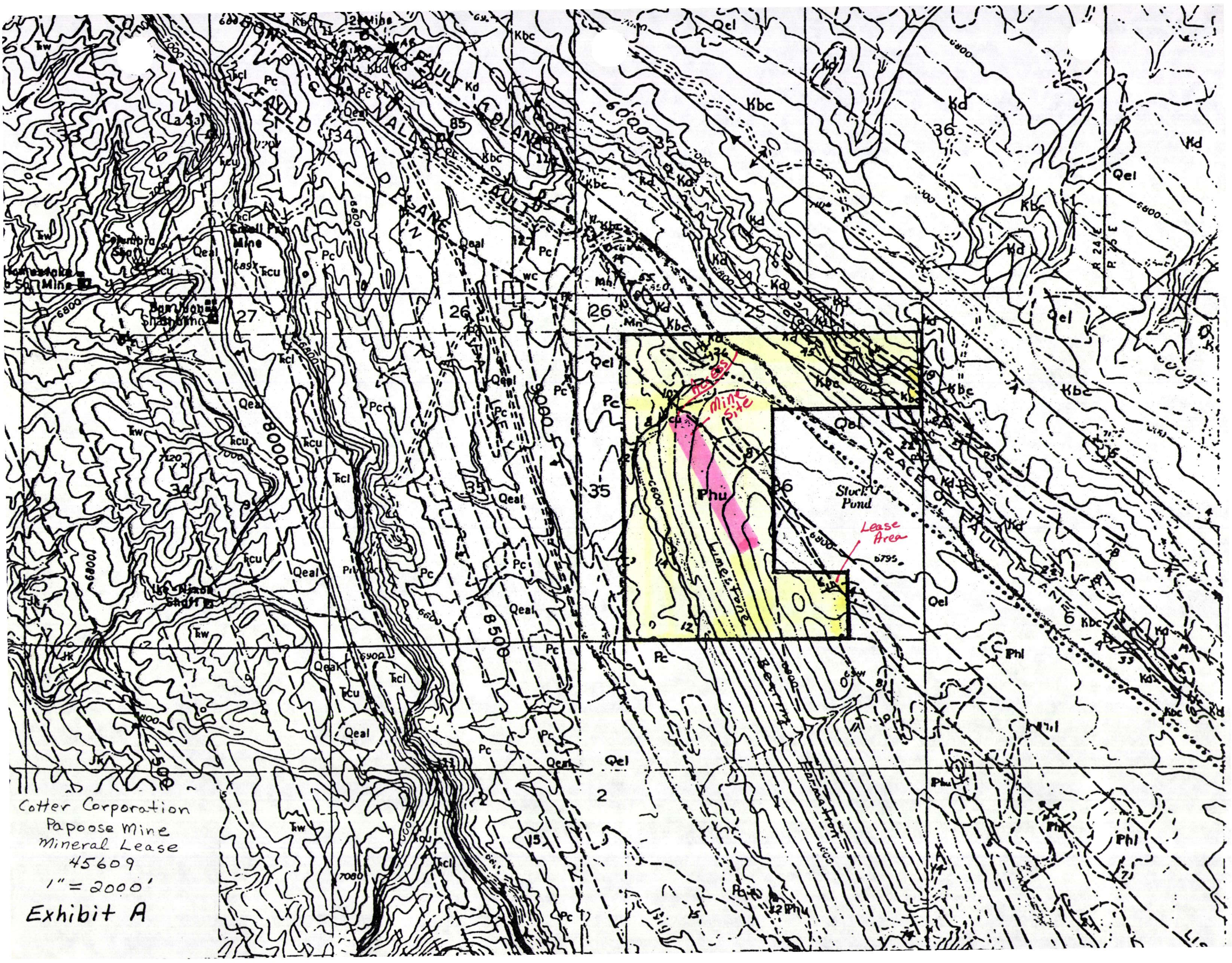
C. Variance

As the mining operations advance to the southeast, less and less topsoil cover will be encountered. Due to this, Cotter Corporation is requesting a variance under rule R647-4-111. If approved, the reclamation plan (in areas of thin topsoil) will be to concentrate the available soils into "islands" or isolated areas to provide the necessary soil requirements for generation of vegetation. These "islands" will be evenly scattered throughout the mined area.

As indicated in the Large Mine Permit application (under III. Operation part 16, Vegetation) two transects using the Line Intercept method to survey cover averaged 24% rock/rock fragments. In some of the worse areas the topsoil may range between 1"-6" in thickness. When considered the rough nature of the limestone surface immediately underlying the topsoil, it may not be feasible to reasonably separate the minimal amounts of topsoil from the limestone as the mine advances to the southeast boundary of the permit area. Due to these difficulties, we may be lucky to create 12" thick "islands" on 5% of the reclaimed acreage. Even at this low estimate, we should manage a net gain in available grazable vegetation when compared to the present conditions.

Berms and water bars may be placed where needed to prevent erosion during re-vegetation. This will also prevent sediment delivery to the nearby drainage. The land will thus be returned to the pre-mining use of livestock and wildlife grazing.

JS/tlt
limemine.js



Cotter Corporation
Papoose Mine
Mineral Lease
45609
1" = 2000'

Exhibit A

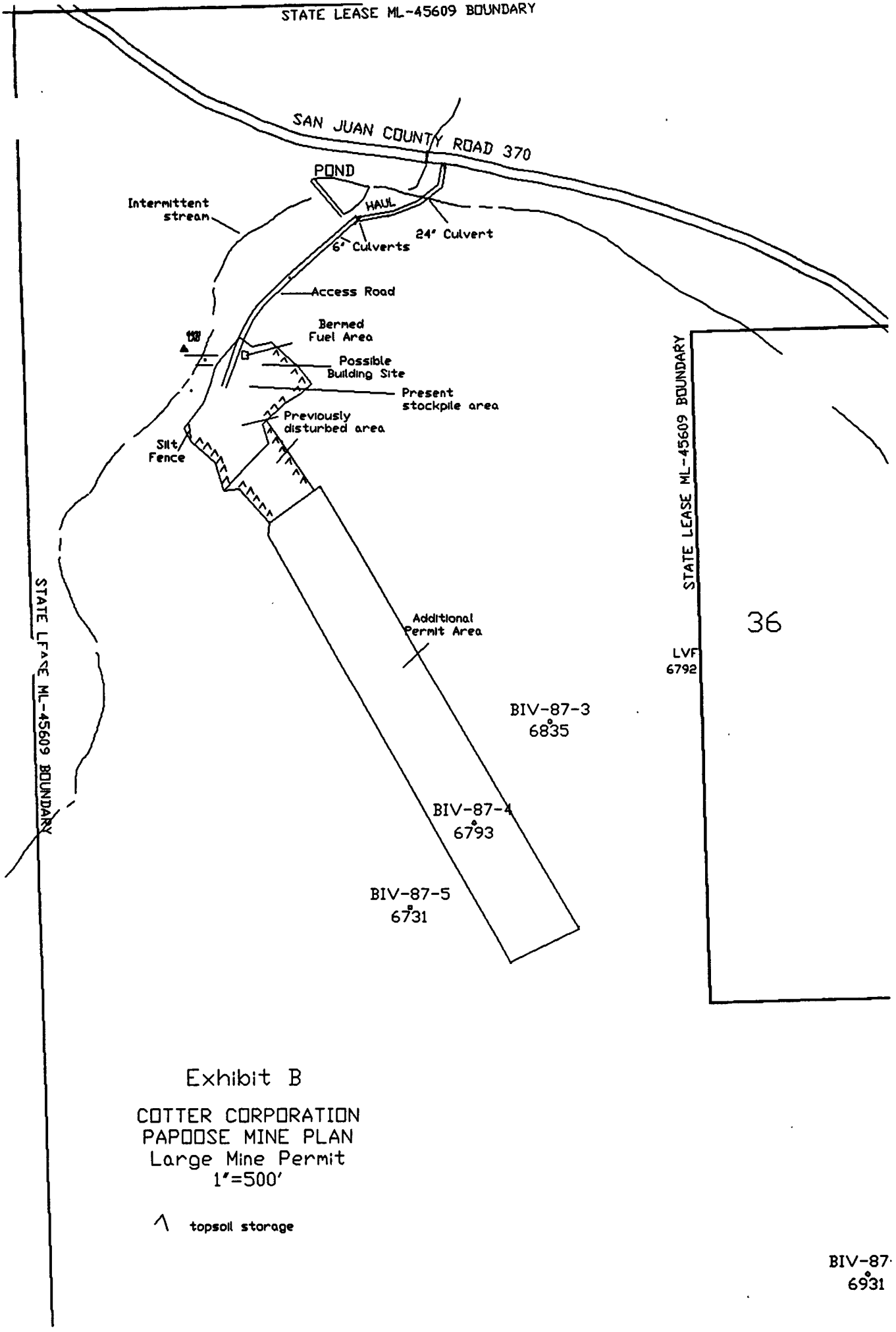


Exhibit B

COTTER CORPORATION
PAPOOSE MINE PLAN
Large Mine Permit
1"=500'

topsoil storage

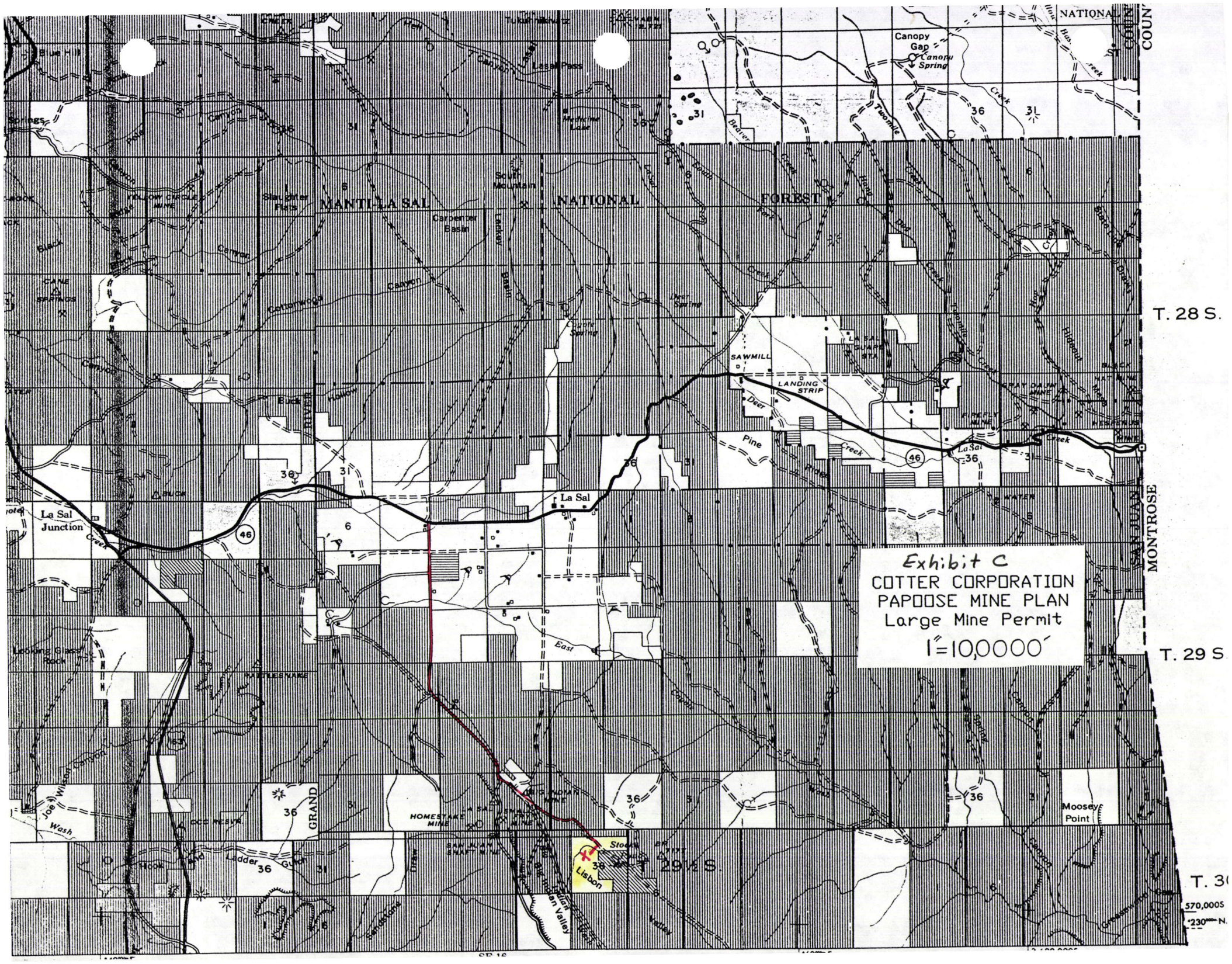


Exhibit C
COTTER CORPORATION
PAPOOSE MINE PLAN
Large Mine Permit
1"=10,0000'
T. 28 S.
T. 29 S.
T. 29½ S.
T. 30
MANTI-LA SAL NATIONAL FOREST
NATIONAL
SAN JUAN
MONTROSE
GRAND
La Sal
La Sal Junction
Lisbon
Canopy Gap
Canopy Spring
SAWMILL
LANDING STRIP
HOMESTAKE MINE
Moosey Point
Looking Glass Rock
Joe Wilson Canyon
Ladder Gulch
Dry Mesa Valley
Pine Ridge
Deer Creek
Pine Creek
Beaver Creek
Tuxedo Creek
Tuxedo Ridge
Carpenter Basin
Lankey Basin
Slaughter Flats
Yellow Circle Mine
Cane Springs
Cottonwood Canyon
Medicine Lake
Sawmill Mountain
Castle Spring
Hot Spring
Rattlesnake
Sandstone
Stone Cabin
Colo. 46
Colo. 141
Colo. 163
Colo. 90
Colo. 128
Colo. 139
Colo. 141
Colo. 348
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Exhibit D

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
SECTION II-E TECHNICAL GUIDE

ECOLOGICAL SITE DESCRIPTION
PINYON JUNIPER WOODLAND
_____, COLORADO FIELD OFFICE

Ecological Site Name: Shallow Loamy Mesa Top PJ #141

Ecological Site Number: GF - 039XY141CO
GF - 048XY141CO

Date: 03/01/95

Author's Initials: TO/CS/JA/DR/JH/BK

PART A: PHYSICAL CHARACTERISTICS

1. Soil Narrative:

   a. The soils in this site are shallow, well drained, and occur on gently sloping mesa tops. They formed in loess, colluvium and residual sandstone. Permeability is moderate above the bedrock. The available water capacity is very low. Erosion by water is slight to moderate and the hazard of erosion by wind is moderate. The natural soil fertility is low.

   b. List of Soil Taxonomic Units or Soil Mapping Units for all soils included in this site:

SSA	Soil Series	Surface Texture	Slope Ranges	Phase
671	Longburn	CBV Sandy loam	1-12%	-
671	Arabrab	Fine sand	1-12%	-

2. Landscape Factors

   a. Physiography:

      1. Elevation: Low: 7000 ft. High: 7800 ft.

      2. Percent Slope: Low 1% High 12%

      3. Nearly level to gently sloping areas on mesa tops.

3. Climate Factors

a. Hard freeze free period: 180 to 220 days (24°F)

b. Freeze-free period: 160 to 180 days (28°F)

c. Frost-free period: 145 to 170 days (32°F)

d. Mean annual precipitation: 15 to 18 inches

e. Mean annual air temperature: 47 to 50°F

f. Mean annual soil temperature: 49 to 52°F

g. Moisture and temperature distribution:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PPT												
HIGH	2.9	2.2	2.7	1.8	1.7	1.1	2.9	2.7	2.1	3.0	2.0	2.7
MEAN	1.9	1.4	1.7	1.2	1.1	0.6	1.9	1.8	1.3	1.7	1.3	1.8
LOW	0.8	0.5	0.5	0.6	0.4	0.1	0.8	0.6	0.6	0.6	0.7	0.6
PERCENT	11	8	10	7	6	3	11	10	7	10	7	10
TEMP												
HIGH	39.6	43.8	49.8	59.8	70.5	81.8	86.9	84.3	77.4	65.7	50.2	41.1
MEAN	29.2	33.8	38.0	46.5	56.4	66.6	72.3	70.1	63.6	52.7	39.2	31.0
LOW	18.8	21.8	26.3	33.2	42.3	51.5	57.7	55.8	49.8	39.7	28.2	20.9

4. **Vegetation Factors - Climax Plant Community:**

a. Site Description Narrative:

When this site is at or near its potential, pinyon pine and Utah juniper dominate the site and make up over 80 percent of the plant community. Understory production is very limited and provides marginal amounts of forage for livestock and or wildlife. It does provide good escape cover and thermal cover for deer. When the tree canopy cover exceeds 30 percent, diversity, both plant and animal, drops to its lowest level.

When the tree canopy ranges from 10 to 30 percent, a wide variety of grasses, forbs and shrubs will also be present in addition to the pinyon pine and Utah juniper. Muttongrass, needleandthread, Indian ricegrass and bottlebrush squirreltail are the principal grasses. Forbs usually present include Wrights birdbeak, silvery lupine, rocky mountain penstemon, Crandall penstemon and Hoods phlox. Shrubs usually present include cliff fendlerbush, Torrey mormontea, low rabbitbrush, datil yucca, antelope bitterbrush, mountain mahogany and Utah serviceberry. During this tree canopy stage, diversity of plant and animal species will reach its peak.

When the tree canopy cover ranges from 0-10%, the previously mentioned species will generally be present with the grasses and forbs producing 80 to 90 percent of the total production. When the tree canopy level is reduced by fire, chaining and/or application of herbicides, forage production will be at its highest level for big game animals as well as domestic livestock.

b. Vascular Plant Community Composition (by air-dry weight):

Plant Symbol	Common Name	Productivity by Canopy Classes 0 -15 %	15 -30%	30 - +%
GRASSES AND GRASSLIKES				
POFE	MUTTONGRASS	30 - 35	20 - 25	5 - 10
ORHY	INDIAN RICEGRASS	10 - 15	5 - 10	0 - 1
STCO4	NEEDLEANDTHREAD	5 - 10	0 - 5	0 - 1
ELEL5	BOTTLEBRUSH SQUIRRELTAIL	0 - 5	0 - 5	0 - 1
FORBS				
LUAR3	SILVERY LUPINE	1 - 5	1 - 5	0 - 1
COWR2	WRIGHT'S BIRDBEAK	0 - 1	1 - 3	0 - 1
SPCO	SCARLET GLOBEMALLOW	1 - 3	1 - 3	0 - 1
PEST2	ROCKY MOUNTAIN PENSTEMON	1 - 3	1 - 2	0 - 1
PECR5	CRANDALL PENSTEMON	1 - 3	1 - 2	0 - 1
ERUM	SULFUR BUCKWHEAT	1 - 3	1 - 2	0 - 1
PHHO	HOODS PHLOX	0 - 1	0 - 2	0 - 1
COUM	BASTARD TOADFLAX	0 - 1	0 - 2	0 - 1
POAV	PROSTRATE KNOTWEED	0 - 1	0 - 1	0 - 1
PEPU7	ROCK GOLDENROD	0 - 1	0 - 1	0 - 1
PPFF	OTHER PERENNIAL FORBS	0 - 1	0 - 1	0 - 1
SHRUBS & HALFSHRUBS				
FERU	CLIFF FENDLERBUSH	0 - 3	0 - 5	0 - 2
EPTO	TORREY MORMONTEA	0 - 3	0 - 5	0 - 1
CHHU2	LOW RABBITBRUSH	0 - 5	0 - 5	0 - 1
YUBA	DATIL YUCCA	0 - 3	0 - 5	0 - 1
PUTR2	ANTELOPE BITTERBRUSH	0 - 3	0 - 5	0 - 1
CEMO2	TRUE MOUNTAIN MAHOGANY	0 - 3	0 - 5	0 - 1
AMUT	UTAH SERVICEBERRY	0 - 3	0 - 5	0 - 1
TREES				
PIED	PINYON PINE	0 - 5	5 - 15	20 - 60
JUOS	UTAH JUNIPER	0 - 10	10 - 20	20 - 60

c. Total Annual Understory Production by Canopy Class in an Average Year:
(all production below 4 1/2 feet, air-dry)

0 - 10%	650	to	800 lbs. per acre
10 - 30%	300	to	600 lbs. per acre
30 - +%	50	to	150 lbs. per acre

d. Total Annual Production by Canopy Class in an Average Year:
(includes all overstory and understory production, air-dry)

0 - 15%	700	to	900 lbs. per acre
15 - 30%	600	to	800 lbs. per acre
30 - +%	450	to	700 lbs per acre

e. Animal Preference Values by Species 1/

Plant Symbol	Common Name	ANIMAL PREFERENCE C S H	D E P	G S S B B M
GRASSES AND GRASSLIKES				
POFE	MUTTONGRASS	P P P	P P P	D D D
ORHY	INDIAN RICEGRASS	P P P	P D D	D P P
ELEL5	BOTTLEBRUSH SQUIRRELTAIL	D D D	D D D	D D D
STCO4	NEEDLEANDTHREAD	P D P	P D D	U D D
FORBS				
COWR2	WRIGHT'S BIRDBEAK	U U U	U U U	D D D
LUAR3	SILVERY LUPINE	U D U	P P D	P P P
SPCO	SCARLET GLOBEMALLOW	D D D	P P P	D P P
PEST2	ROCKY MOUNTAIN PENSTEMON	D D U	D D D	D D D
PECR5	CRANDALL PENSTEMON	U D U	U D D	D D D
ERUM	SULFUR BUCKWHEAT	U D U	D D D	D D D
PHHO	HOODS PHLOX	U U U	U U U	U U U
COUM	BASTARD TOADFLAX	U U U	U U U	U U U
POAV	PROSTRATE KNOTWEED	U U U	U U U	U U U
PEPU7	ROCK GOLDENROD	U U U	U U U	U U U
SHRUBS & HALFSHRUBS				
AMUT	UTAH SERVICEBERRY	D D U	D D U	D D D
FERU	CLIFF FENDLERBUSH	U D D	U D U	U U U
EPTO	TORREY MORMONTEA	D P D	D P P	D D D
CHHU2	LOW RABBITBRUSH	U D U	U D N	D D D
YUBA	DATIL YUCCA	D D D	D D D	D D D
PUTR2	ANTELOPE BITTERBRUSH	P P D	P P P	P P P
CEMO2	TRUE MOUNTAIN MAHOGANY	D P U	D P P	D D P
TREES				
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JUOS	UTAH JUNIPER	U U U	D D U	D P D

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SSA	Soil Series	Surface Texture	Slope Ranges	Phase
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2. Percent Slope: Low 1% High 12%

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b. Freeze-free period: 160 to 180 days (28°F)

c. Frost-free period: 145 to 170 days (32°F)

d. Mean annual precipitation: 15 to 18 inches

e. Mean annual air temperature: 47 to 50°F

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b. Vascular Plant Community Composition (by air-dry weight):

Plant Symbol	Common Name	Productivity by Canopy Classes 0 -15 %	15 -30%	30 - +%
GRASSES AND GRASSLIKES				
POFE	MUTTONGRASS	30 - 35	20 - 25	5 - 10
ORHY	INDIAN RICEGRASS	10 - 15	5 - 10	0 - 1
STCO4	NEEDLEANDTHREAD	5 - 10	0 - 5	0 - 1
ELEL5	BOTTLEBRUSH SQUIRRELTAIL	0 - 5	0 - 5	0 - 1
FORBS				
LUAR3	SILVERY LUPINE	1 - 5	1 - 5	0 - 1
COWR2	WRIGHT'S BIRDBEAK	0 - 1	1 - 3	0 - 1
SPCO	SCARLET GLOBEMALLOW	1 - 3	1 - 3	0 - 1
PEST2	ROCKY MOUNTAIN PENSTEMON	1 - 3	1 - 2	0 - 1
PECR5	CRANDALL PENSTEMON	1 - 3	1 - 2	0 - 1
ERUM	SULFUR BUCKWHEAT	1 - 3	1 - 2	0 - 1
PHHO	HOODS PHLOX	0 - 1	0 - 2	0 - 1
COUM	BASTARD TOADFLAX	0 - 1	0 - 2	0 - 1
POAV	PROSTRATE KNOTWEED	0 - 1	0 - 1	0 - 1
PEPU7	ROCK GOLDENROD	0 - 1	0 - 1	0 - 1
PPFF	OTHER PERENNIAL FORBS	0 - 1	0 - 1	0 - 1
SHRUBS & HALFSHRUBS				
FERU	CLIFF FENDLERBUSH	0 - 3	0 - 5	0 - 2
EPTO	TORREY MORMONTEA	0 - 3	0 - 5	0 - 1
CHHU2	LOW RABBITBRUSH	0 - 5	0 - 5	0 - 1
YUBA	DATIL YUCCA	0 - 3	0 - 5	0 - 1
PUTR2	ANTELOPE BITTERBRUSH	0 - 3	0 - 5	0 - 1
CEMO2	TRUE MOUNTAIN MAHOGANY	0 - 3	0 - 5	0 - 1
AMUT	UTAH SERVICEBERRY	0 - 3	0 - 5	0 - 1
TREES				
PIED	PINYON PINE	0 - 5	5 - 15	20 - 60
JUOS	UTAH JUNIPER	0 - 10	10 - 20	20 - 60

c. Total Annual Understory Production by Canopy Class in an Average Year:
(all production below 4 1/2 feet, air-dry)

0 - 10%	650	to	800 lbs. per acre
10 - 30%	300	to	600 lbs. per acre
30 - +%	50	to	150 lbs. per acre

d. Total Annual Production by Canopy Class in an Average Year:
(includes all overstory and understory production, air-dry)

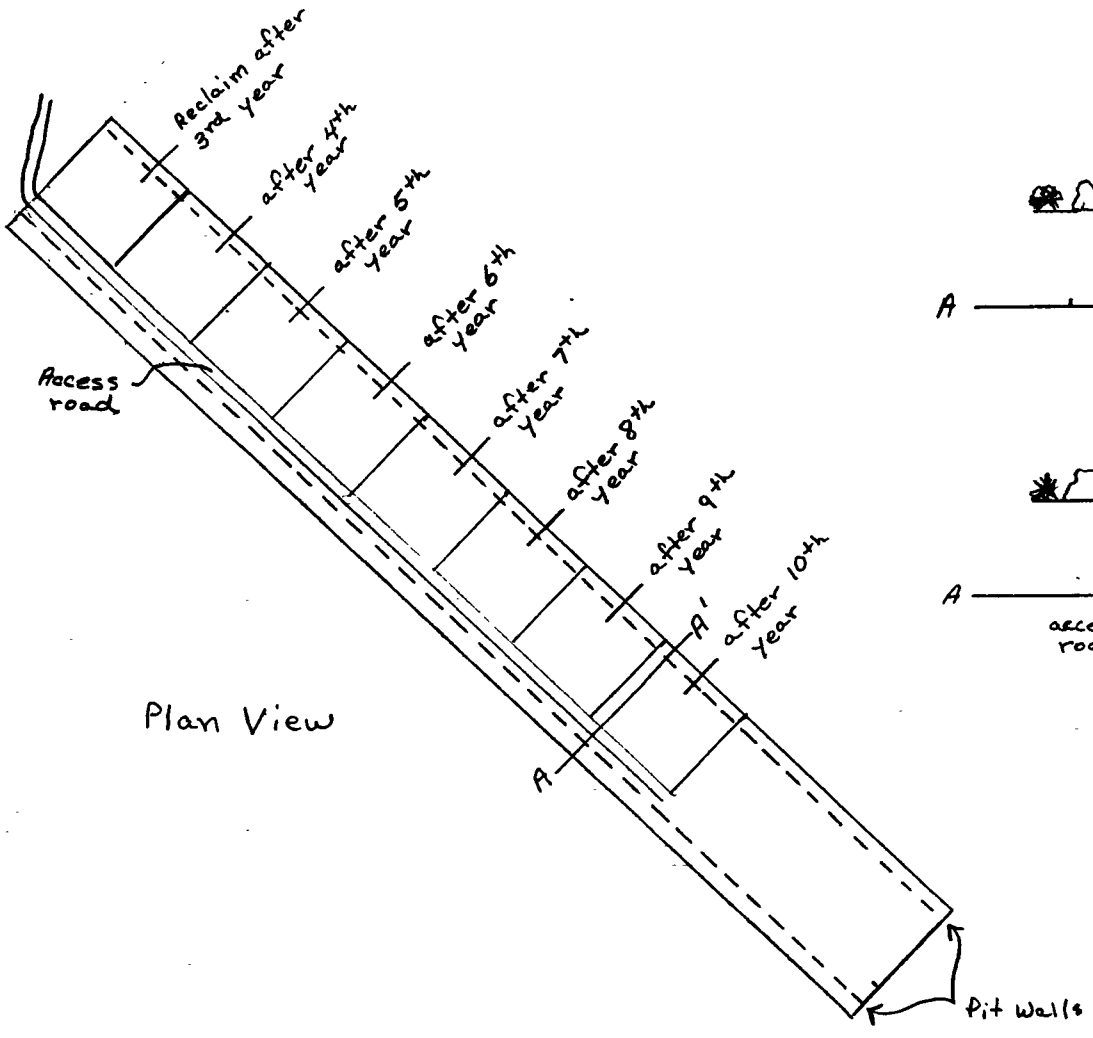
0 - 15%	700	to	900 lbs. per acre
15 - 30%	600	to	800 lbs. per acre
30 - +%	450	to	700 lbs per acre

e. Animal Preference Values by Species 1/

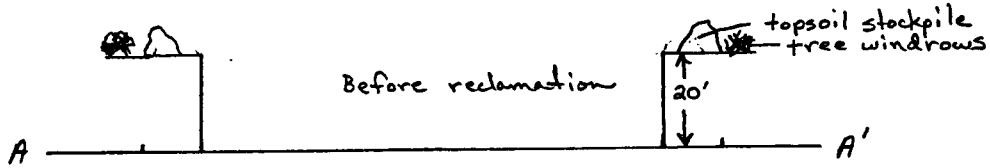
Plant Symbol	Common Name	ANIMAL PREFERENCE CSH	DEP	GBB SBM
GRASSES AND GRASSLIKES				
POFE	MUTTONGRASS	P P P	P P P	D D D
ORHY	INDIAN RICEGRASS	P P P	P D D	D P P
ELEL5	BOTTLEBRUSH SQUIRRELTAIL	D D D	D D D	D D D
STCO4	NEEDLEANDTHREAD	P D P	P D D	U D D
FORBS				
COWR2	WRIGHT'S BIRDBEAK	U U U	U U U	D D D
LUAR3	SILVERY LUPINE	U D U	P P D	P P P
SPCO	SCARLET GLOBEMALLOW	D D D	P P P	D P P
PEST2	ROCKY MOUNTAIN PENSTEMON	D D U	D D D	D D D
PECR5	CRANDALL PENSTEMON	U D U	U D D	D D D
ERUM	SULFUR BUCKWHEAT	U D U	D D D	D D D
PHHO	HOODS PHLOX	U U U	U U U	U U U
COUM	BASTARD TOADFLAX	U U U	U U U	U U U
POAV	PROSTRATE KNOTWEED	U U U	U U U	U U U
PEPU7	ROCK GOLDENROD	U U U	U U U	U U U
SHRUBS & HALFSHRUBS				
AMUT	UTAH SERVICEBERRY	D D U	D D U	D D D
FERU	CLIFF FENDLERBUSH	U D D	U D U	U U U
EPTO	TORREY MORMONTEA	D P D	D P P	D D D
CHHU2	LOW RABBITBRUSH	U D U	U D N	D D D
YUBA	DATIL YUCCA	D D D	D D D	D D D
PUTR2	ANTELOPE BITTERBRUSH	P P D	P P P	P P P
CEMO2	TRUE MOUNTAIN MAHOGANY	D P U	D P P	D D P
TREES				
PIED	PINYON PINE	U U U	U U U	P P P
JUOS	UTAH JUNIPER	U U U	D D U	D P D

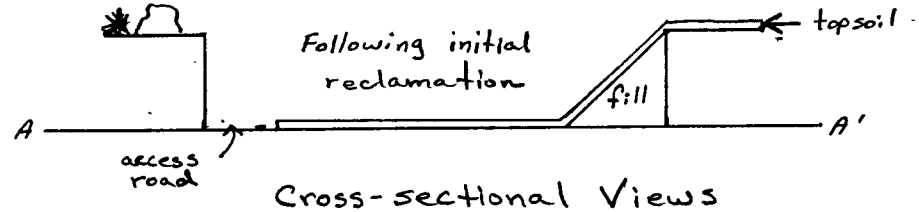
EXHIBIT F

Papoose Limestone Mine
Reclamation Plan



Plan View





Cross-sectional Views
not to scale

This page is a reference page used to track documents internally for the Division of Oil, Gas and Mining

Mine Permit Number M0370084 Mine Name Paposse Limestone Mine
Operator Cotter Corporation Date May 26, 1995
TO _____ FROM _____

__CONFIDENTIAL __BOND CLOSURE __LARGE MAPS X EXPANDABLE
__MULTIPUL DOCUMENT TRACKING SHEET __NEW APPROVED NOI
__AMENDMENT _OTHER _____

Description YEAR-Record Number

X NOI __Incoming __Outgoing __Internal __Superceded

NOI

___NOI __Incoming __Outgoing __Internal __Superceded

__NOI __Incoming __Outgoing __Internal __Superceded

__NOI __Incoming __Outgoing __Internal __Superceded

__TEXT/ 81/2 X 11 MAP PAGES __11 X 17 MAPS __LARGE MAP

COMMENTS: _____

CC: _____